School of Electronic Engineering and Computer Science

Final Report

Programme of study:

Computer Science with Business Management

Project Title:

Reservation Database System with Analysis

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Date: Enter submission date

Acknowledgements

Abstract

This project was designed to improve the current existing restaurant booking system as well as analysis the booking records. In other words, the end system will not only directly interact with the diners who wants to book the table but also the manager/administer can use it as a useful tool to analysis booking records. The end system will be divided into three categories, Book a table, Edit booking and Analysis (Login required). First, two categories are designed for the restaurant consumers, the basic functionality of booking system will be included, in addition, there will be few extra functions added to the system such as pre-order and the waiting list. An analysis is designed for the restaurant managers which allows them to breakdown booking records in monthly, seasonal, yearly and represent the data in graphical format.

In order to achieve the project's aims, review current systems was fulfilled not only get a general idea of design the booking interface but also what functions must include in the end system. The questionnaires were designed to identify what features must and least important to contain in booking system, even more, it indicated new features they would like to included in the booking system. Similarly, analysis functionality was carried out by review existing system and noted down important features as well as possible features to add into end system. With all the feedback received, risk register was next step before going into the design process. It identified the potential risks that might occur while designing and coding, even more, preventative actions listed as well.

Next part of the report illustrated how the end system interface was designed that followed by analysis existing system and list of functional and non-functional requirements suggested from the questionnaire. Moreover, the report discussed the details of the problems and solutions had come up while developing end system.

After end system fully coded, testing performed to make sure everything is running smoothly and one more questionnaire was taken by few users who used this end system. This will not only provide the direct usage experience feedback of system but additionally, the suggestions on layouts, representations and functions helped me to improve it.

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1. Introduction

1.1 Project Aims

The purpose of this project is to improve the interaction between system and consumers and implement unique features. In this case, the research of the current existing systems are important, also a well-design questionnaire is required in order to capture what consumer thinks about booking system and with lists of potential improvements. Consequently, the project required a well-structure database to store customer information, booking records and staff details. The analysis tool will require to fetch the booking records from the database and convert those text or numeric data into graphical results and some calculations will perform such as most popular month this year.

List of aims and functions:

- Improvement on the current existing restaurant reservation booking system.
- Well-structure and design for both questionnaire and database.
- The end system must be easy and simple to use.
- Adding the new features into the system.
    - Online/up-to-date waiting list
    - Pre-order request
    - Analysis tools for the manager (shows daily/seasonally/yearly statistics)
    - Graphical results (bar chart, line graph, etc.)
    - Ranking system (data are comparable)
    - Searchable (data are searchable)

1.2 Motivation and challenges

According to the statistics, there are 3,696,238,430 internet users till 2016 and currently the internet usage is still growing (Internet World Stats, 2017) [1].

Here is the lists of what I must complete:

- Set up GitHub repository.
- Research must be carrying out on current existing restaurant reservation system.
- Survey and interview must be done with the end users.
    - Including customers, staff and managers.
- States what are the statistics/data that manager interested from the booking system.
- Entity relationship diagram required.
- Relational database schema required.
- Normalized design table required.
- Regular meeting with the supervisor.
- Research requirements and designs.
- The end system accessible via smartphone browser and website.
- Entity relationship diagram.
- Relational database schema.
- Normalized design table.
- Research and design document.

Risks to successful completion of my project:

1. Fail to implements the requirements from the research I have done.
2. During the coding periods, I spend too much time on it, so less time can finalize the code/ project.
3. During the debugging periods, I had few errors do not know how to solve.

In order to solve those risks, I will:

1. Note down each issue I got at every process.
2. If the requirements are difficult to implement, I will make some adjustments.
3. Find a solution by myself first.
4. Discuss with my supervisor if I cannot find the solution.

Here is the list of languages and software that I will use to develop my project:

- Languages
  - Java
  - SQL
- Software
  - NetBeans
  - SQLite Browser
  - JavaFX Scene Builder
  - Visual Paradigm
  - Java 3D

1.3 Overview

tbc...
Context for report and the motivation for your work

2. Research

2.1 Background

Restaurant Reservation Database System and Analysis Tool

The end system will require a Database Management Systems (DBMS), which not only enable the restaurant consumer to book the table but also the restaurant manager can review the data. DBMS is a collection of programs that enables you to store, modify, and extract information from a database (Vangie Beal, 2005) [2]. The DBMS provides users and programmers with a systematic way to create, retrieve, update and manage data (Margaret Rouse, 2015) [3].

2.2 Review existing system

Researched current existing systems:

- Official restaurant booking systems:
  - Duck&Waffle
  - Kintan
  - Patisserie Valerie

- Second party systems for booking tables or order/deliver foods:
  - OpenTable
  - Just-Eat

2.3 Research conclusion

2.4 Proposal new system

Two questionnaires have been designed from me, one questionnaire is used to collect user's usage experience on restaurant booking system, the another one is answered by restaurant manager/staff for the analysis tool system.

As the questionnaires conducted, there are some requirements must be included in my end system:

- Functional requirements:
  - Self-Queuing System
  - Pre-Order System
  - Confirmation Message via E-mail and Text message
  - Remind Message
  - Only Present and Future Dates/Times can be selected
  - Updated/Insert booking information immediately
  - Compare and Contrast
  - Search Bar
  - Graphic Presentation

- Non-Functional requirements:
  - User Interface
    - Colors
    - Text font

        - Assist/Tips
        - Friendly feedback
    - Browser Compatibility
        - Smartphone
        - Tablet
        - PC/laptop
    - Privacy
        - Terms and Conditions

2.5 Risk Register

There are two risk registers at below, one risk register is for Restaurant Booking System and the another risk register is for Restaurant Manager Analysis System.

Restaurant Booking System

RiskID	Description of risk	Description of impact	Rating		Preventative actions
			Likelihood rating	Impact rating	
1	Missing to insert the booking data input from customers to end system	The restaurant will have no detail of booking data when the customers arrive.	LOW	HIGH	Update the database immediately after the customers has booked the entire.
2	Missing to send a confirmation message via text or email to different customers.	This will cause the confusion.	LOW	MEDIUM	After the customer has hit the booked or any confirm button the system should immediately send a confirmation message via the options customer had chosen.
3	System not update the booked and available table on time	This will affect the loss of customers and inconvenient system for customers.	MEDIUM	HIGH	Solution same as RiskID 1.

4	System not send the auto-queue number via text correctly	The waiting customers will have the confusion.	MEDIUM	MEDIUM	When the customers require a self-queuing service at the restaurant, the staff should take their phone number and insert into the system directly.
5	System allows user to select booking date in past	The customers have a chance to book the table at the past.	LOW	LOW	Disable the selection of past date, only the present and future date will can be selected.

Restaurant Manager Analysis System

Risk ID	Description of risk	Description of impact	Rating		Preventative actions
			Likelihood rating	Impact rating	
1	Failure in represent selected data in graphical form	The end user (manager) will not be able to compare and contrast the data.	LOW	HIGH Why	Enable the data can be selected from any row and column.
2	Failure in search data	Require more time to find old data.	MEDIUM	MEDIUM	Add in the functions allow the end users to search data in UPPERCASE or lowercase letter.
3	User can edit the past date (old) data	The data realist will decrease.	LOW	HIGH	Set the table as view only, thus the end user will not be able to edit the data.

The end system will carefully follow those requirements for booking and analysis system.

3. Requirements specification

3.1 Primary functional requirements

3.2 Secondary functional requirements

3.3 Non-functional requirements

3.4 Use case examples

3.5 Summary

4. Design

4.1 Development environment

4.2 Summary

5. Implementation

5.1 Pratical techniques

5.2 Problems

5.3 Solutions

practical techniques, problems, solutions

6. Testing and/or evaluation

6.1 Test cases

6.2 Efficiency testing

6.3 Evaluation

6.4 Summary

how well your solution worked

7. Discussion / conclusions

7.1 What I learned and achieved

7.2 Challenges that I faced

7.3 Summary

This should be a critical analysis of your work and an honest appraisal of the achievements of your project.

8. Further work

8.1 What would I add

8.2 What would I do different

8.3 Summary

What more you would do if you had time.

References / bibliography

[1] World Internet Users Statistics by Regions Dec. 2016, Internet World Stats
http://www.internetworldstats.com/stats.htm

[2] DBMS - database management system, Vangie Beal, 2005
http://www.webopedia.com/TERM/D/database_management_system_DBMS.html

[3] NoSQL DBMS (Not only SQL database management system), Margaret Rouse, 2015
http://searchdatamanagement.techtarget.com/definition/NoSQL-DBMS-Not-only-SQL-database-management-system

Appendices

The purpose of your report is:
• to describe the project to the examiners
• to “sell yourself” by bringing out the best of what you have achieved
• to show that you have evaluated your work and know the successes and limitations.
• to demonstrate that you are capable of a sustained piece of writing.

More detailed material that is not crucial to understanding of main message(s), e.g.
Detailed experimental results
Data sheets if the parts these are important to explain your design
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Copy of questionnaire / interview script

There is a limit of 50 pages without appendices or 60 pages with appendices. Use 12-point type and make sure that figures and tables have captions. Word or Latex can be used for the document.